

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Jan.	(2) Length of record.	(3) Total for Jan., 1891.	(4) Departure from average.	(5) Extremes for Jan.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
<i>Louisiana.</i>		<i>Inches</i>	<i>Years</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>		<i>Inches</i>	
Grand Coteau	St. Landry ..	6.37	8	10.43	+4.06	13.30	1883	2.52	1887
<i>Maine.</i>									
Orono	Penobscot ...	4.58	21	7.66	+3.08	7.66	1891	2.00	1875
<i>Maryland.</i>									
Cumberland	Allegany	2.12	19	2.93	+0.81	3.90	1878	0.30	1887
<i>Massachusetts.</i>									
Amherst	Hampshire ..	3.34	55	8.17	+4.83	8.17	1891	0.99	1849
Newburyport	Essex	3.62	12	6.86	+3.24	7.76	1886	1.60	1875
Somerset	Bristol	4.32	18	8.94	+4.62	8.94	1891	1.57	1879
<i>Michigan.</i>									
Kalamazoo	Kalamazoo ..	2.42	15	1.56	-0.86	4.90	1876	1.10	1879
Thornville	Lapeer	2.07	14	1.14	-0.93	3.38	1890	0.58	1879
<i>Minnesota.</i>									
Minneapolis	Hennepin ...	1.20	25	0.96	-0.34	3.01	1886	0.06	1869
<i>Montana.</i>									
Fort Shaw	Lewis & Clarke	0.60	20	0.35	-0.25	2.50	1881	0.00	1869
<i>New Hampshire.</i>									
Hanover	Grafton	2.90	46	4.52	+1.62	9.75	1851	0.31	1853
<i>New Jersey.</i>									
Moorestown	Burlington ..	3.45	27	5.07	+1.62	5.82	1882	1.13	1867
South Orange	Essex	4.07	19	10.55	+6.48	10.55	1891	1.17	1876
<i>New York.</i>									
Cooperstown	Otsego	2.48	37	5.54	+3.06	5.54	1891	0.32	1860
Palermo	Oswego	3.18	37	2.44	-0.74	6.50	1874	0.16	1884
<i>North Carolina.</i>									
Lenoir	Caldwell	4.38	19	5.60	+1.22	9.60	1878	1.10	1890
<i>Ohio.</i>									
N. Lewisburgh	Champaign ..	3.78	19	3.50	-0.28	8.67	1876	0.44	1877
Wauseon	Fulton	2.33	17	2.56	+0.23	4.14	1890	1.29	1879
<i>Oregon.</i>									
Albany	Linn	8.80	14	4.65	-4.15	14.45	1867	2.22	1882
Eola	Polk	6.12	21	4.99	-1.13	16.08	1888	2.53	1875
<i>Pennsylvania.</i>									
Dyberry	Wayne	3.20	21	5.30	+2.10	5.30	1891	0.70	1872
Grampian Hills	Clearfield ...	3.76	20	3.62	-0.14	5.47	1888	1.21	1872
Wellaborough	Tioga	6.43	11	6.53	+0.10	12.17	1886	1.98	1890
<i>South Carolina.</i>									
Statesburgh	Sumter	3.54	9	2.90	-0.64	6.04	1885	0.90	1890
<i>Tennessee.</i>									
Austin	Wilson	5.55	22	5.93	+0.38	18.11	1882	2.66	1886
<i>Texas.</i>									
New Ulm	Austin	4.30	17	2.26	-2.04	10.56	1882	1.00	1887
<i>Vermont.</i>									
Stratford	Orange	3.50	17	6.10	+2.60	6.10	1891	1.70	1878
<i>Virginia.</i>									
Birdsneest	Northampton	3.66	22	6.00	+2.34	6.75	1882	1.00	1876
<i>Washington.</i>									
Fort Townsend	Jefferson	2.19	20	2.91	+0.72	4.65	1890	0.66	1859
<i>Wisconsin.</i>									
Madison	Dane	1.93	25	1.19	-0.74	3.65	1874	0.40	1878

* 1865, 1867, and 1872.

EXCESSIVE PRECIPITATION.

Precipitation to equal or exceed 10.00 was reported at 11 stations in Louisiana, at 8 stations in Mississippi, at 4 stations in Texas, at 3 stations in Connecticut, at 2 stations in Washington, and at 1 station in Alabama, Massachusetts, New York, New Jersey, and Oregon; the greatest amount, 15.93, being noted at Neah Bay, Wash.

The heaviest precipitation for January commonly occurs in west Washington and Oregon and north California, where in the last 21 years it has failed to exceed 10.00 in 8 years in Washington, 1875 to 1878, 1881 to 1883, and 1889; in 8 years in Oregon, 1872, 1875, 1877 to 1879, 1882, 1884, and 1885; and in 6 years in California, 1873, 1883 to 1885, 1887, and 1889. Among the heavier January rainfalls reported in that region during the period named are: 30.50, at Neah Bay, Wash., in 1874; 22.16, at Astoria, Oregon, in 1871; and 41.63, at Upper Mattole, Cal., in 1888. For this period precipitation to equal or exceed 10.00 in January has been reported for 7 years in Ga., N. Y., and N. C.; for 6 years in Tenn.; for 5 years in Ala. and La.; for 4 years in Ark., Fla., and Tex.; for 3 years in Ind., Mass., and Miss.; for 2 years in Ill., Ohio, Pa., and Va.; and for 1 year in Conn., Iowa, Kans., Ky., Me., Md., Mo., Nev., N. H., and N. J. In Massachusetts the monthly precipitation exceeded 15.00 in 1874 and 1875; in Georgia in 1882 and 1883; in Illinois in 1876; in Indiana in 1884; in Louisiana in 1886; and in Tennessee in 1882.

Precipitation to equal or exceed 2.50 in 24 hours was reported at 18 stations in La., and on 10 dates, the 1st, 7th to

9th, 20th, 21st, 27th to 29th, and 31st; at 7 stations in Ark., on the 30th and 31st; at 7 stations in Mississippi, and on 5 dates, the 8th, 10th, 21st, 28th, and 29th; at 6 stations in Tenn., on the 30th and 31st; at 5 stations in Tex., and on 5 dates, the 7th, 8th, and 26th to 28th; at 4 stations in N. C., and on 4 dates, the 1st, 10-11th, and 21st; at 3 stations in N. Y., and on 3 dates, the 11-12th and 22d; at 2 stations in Ky., on the 31st; at 2 stations in Mass., and on 3 dates, the 17-18th and 19th; at 1 station in Conn. on the 11-12th; at 1 station in Iowa on the 1st; at 1 station in Me., on the 11-12th; at 1 station in N. J., on the 24-25th; at 1 station in Nebr., on the 27-28th; and at 1 station in N. J., on the 24-25th; at 1 station in Nebr., on the 27-28th; and at 1 station in Wash., on the 19th. Among the heavier rainfalls noted for this period are: 5.89, at Houston, Tex., 7-8th; 5.40, at Cheneyville, La., 29th; 5.00, at Jeanerette and Lake Charles, La., 8th; 4.56, at Covington (1), Ky., 30th-31st; and 4.40, at Kosciusko, Miss., 8th.

In the last 21 years precipitation to equal or exceed 2.50 in 24 hours in January has been reported for 12 years in La. and Tenn.; for 11 years in Ga.; for 10 years in N. C. and Tex.; for 8 years in Fla.; for 7 years in Miss., Oregon, and Va.; for 6 years in Cal. and Mass.; for 5 years in Ala., Ark., Ill., N. Y., Ohio, Pa., and Wash.; for 4 years in Ind. and S. C.; for 3 years in Ky., Mo., and N. J.; for 2 years in Conn., Ind. T., Md., and Mich.; and for 1 year in Del., Iowa, Me., N. H., and Wis. Among the heavier 24-hour rainfalls reported for this period are: 8.40, at Point Pleasant, La., 1st-2d, 1886; 7.00, at Emory Grove, Md., 30th, 1879; 6.45, at Huntsville, Tex., 2d, 1890; 6.38, at Jupiter, Fla., 11-12th, 1889; 6.32, at Lynchburgh, Va., 23d, 1885; 6.03, at Hepzibah, Ga., 19-20th, 1889; 6.00, at Fayette, Miss., 6th, 1883; 5.96, at Upper Mattole, Cal., 29th, 1890; 5.71, at Shreveport, La., 13th, 1885; 5.35, at Monroe, La., 2d, 1886; 5.20, at Fullerton, Ark., 1st, 1890. At Upper Mattole, Cal., 31.68 fell from the 27th to 31st, 1888.

Precipitation to equal or exceed 1.00 in 1 hour was reported at 1 station in Tex., on the 9th; at 1 station in N. C., on the 11th; and at 1 station in Tenn., on the 31st. Remarkably heavy rainfall in 1 hour was not reported for January, 1891, and excessive rainfall for 5 and 10 minute periods is given in the table of "Maximum rainfall in one hour or less."

In the last 21 years precipitation to equal or exceed 1.00 in January has been reported for 3 years in Illinois; and for 1 year in California, Florida, Georgia, and Texas. Among the heavier 1-hour rainfalls reported for this period in January are: 4.36 in 1 hour at Atwood, Ill., 1st, 1890; 1.60 in 1 hour, at Cairo, Ill., 17th, 1876; and 1.03, in 28 minutes, at Titusville, Fla., 4th, 1889.

Heavy rainfall at Saint Christopher's Island, W. I., in January, 1880.

Mr J. F. Flagg, Brooklyn, N. Y., has furnished the following description of an extraordinary rainfall at Saint Christopher's Island, British West Indies, in January, 1880: "There was a light rain the evening of the night the downpour took place, but none of consequence before 10 or 11 p. m., and by 5 a. m. the following morning it was all over. There were no rain gauges, but a tank 30 inches deep with vertical sides, such as are used in sugar making, which was known to have been empty before the storm, was filled and running over. The tank was away from any building and it could have received no water save what fell directly from the clouds. The evidence is positive that 30 inches fell, nearly all of it in about 6 hours, and all in 10 or 11 hours, and a low estimate placed the amount at 36 inches. At another estate on the opposite or northerly side of the island, 4 or 5 miles away, and with a mountain some 3,000 feet high intervening, a similar sugar tank, empty the night before, had 23 inches of rainfall the following morning. The little town of Basse Terre, which is built on a nearly flat plain along the sea shore, with a slight upward slope from the water and also sloping in an easterly direction along the shore, with no hill or valley on either side within one-half or

three-fourths of a mile, was covered with a torrent of water 8 feet deep, in places. Several small houses were carried out to sea, larger houses were swept from their foundations, and more than 200 persons were drowned."

Table of excessive precipitation, January, 1891.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Alabama.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>h. m.</i>	
Mountain Home	10.06					
<i>Alaska.</i>						
Juneau	20.51	2.50	8			
<i>Arkansas.</i>						
Brinkley		2.80	30, 31			
Forrest City		2.80	30, 31			
Fulton		3.97	31			
Helena (1)		2.50	31			
Helena (2)		3.55	31			
Little Rock		3.57	30, 31			
Lonoke		2.62	30, 31			
Osceola		3.42	30, 31			
<i>Connecticut.</i>						
Birmingham	10.16					
Southington	10.51	2.90	11, 12			
Waterbury	10.06					
<i>Iowa.</i>						
Clinton		3.03	1			
<i>Kentucky.</i>						
Bowling Green		3.50	31			
Canton		3.50	31			
<i>Louisiana.</i>						
Abbeville	11.45	4.40	8			
Alexandria	10.03					
Amité City		3.15	8			
Baton Rouge		3.12	8			
Cheneyville	13.60	2.50	8			
Do		5.40	29			
Clinton	10.57	2.80	8			
Coushatta (1)		3.00	8			
Crowley	12.18	3.50	1			
Grand Coteau	10.43	3.80	7, 8			
Do		2.76	20, 21			
Do		2.60	27, 28			
Houma		3.01	27, 28			
Jeannerette		5.00	8			
Lake Charles	13.20	5.00	8			
Do		3.80	27			
Marksville	11.34	3.78	28, 29			
Melville	12.30					
New Iberia		4.05	8			
North Louisiana Experiment Station		3.12	8			
Paincourtville		3.07	7, 8			
Plaquemine	11.73	4.65	8, 9			
Shell Beach	11.02	3.50	7			
Do		3.25	27			
Winnabrough		2.50	31			
<i>Maine.</i>						
Farmington		2.51	11, 12			
<i>Massachusetts.</i>						
Long Plain	10.08					
New Bedford (1)		3.40	17, 18			
Plymouth		2.95	19			
<i>Mississippi.</i>						
Bay Saint Louis	10.11	2.60	8			
Brookhaven	10.16	2.79	28, 29			
Canton	10.06					
Edwards	10.38					
Enterprise		2.63	28			
Fayette	12.55	2.92	28, 29			
Kosciusko	11.00	4.40	8			
Do		3.10	10			
Moss Point		2.85	8			
Summit	11.66	2.50	21			
Washington	10.64					
<i>Nebraska.</i>						
Fort Sydney*		3.75†	27, 28			
<i>New Jersey.</i>						
South Orange	10.55	3.10	24, 25			
<i>New York.</i>						
Boyd's Corners		2.61	22			
Minnewaska		2.70	11, 12			
Pawling		2.56	22			
Rondout	11.38					
<i>North Carolina.</i>						
Hatteras		2.89	10, 11			
Highlands		2.70	1			
Soapstone Mount		2.50	21			
Wilmington		3.22	10, 11	1.05	1 00	11
<i>Oregon.</i>						
Gardiner	10.84					
<i>Tennessee.</i>						
Clarksville		3.68	31			
Covington (1)		4.56	30, 31			
Franklin			1.25	1 00		31
Johnsonville		2.50	31			
Memphis		3.96	30, 31			
Trenton		4.17	30, 31			
Union City		3.50	31			
<i>Texas.</i>						
Brazoria	10.88	2.50	28			
Corsicana (1)		3.02	7, 8			
Houston	13.11	5.89	7, 8			
Do		2.86	26, 27			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
<i>Texas—Continued.</i>	<i>Inches.</i>	<i>Inches.</i>		<i>Inches.</i>	<i>h. m.</i>	
Huntsville	10.06	3.50	8			
Palestine	11.11	4.84	7			
Rio Grande				1.00	0 50	9
<i>Washington.</i>						
Neah Bay	15.93	3.10	19			
Tatoosh Island	11.91					

Received too late to be used in general discussion for January, 1891.

<i>New York.</i>						
West Point		3.00	11-12			

Received too late for publication in December, 1890.

<i>California.</i>						
Upper Mattole		3.44	3			

* All snow, and probably too great owing to drifts.

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during January, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	<i>Inch.</i>		<i>Inch.</i>		<i>Inch.</i>	
Bismarck, N. Dak.	0.05	22	0.08	22	0.26	22
Boston, Mass.	0.02	29	0.04	29	0.10	29
Buffalo, N. Y.	0.03	31	0.05	31	0.20	31
Cincinnati, Ohio	0.05	1	0.06	1	0.25	1
Chicago, Ill.	0.01	2	0.02	2	0.10	2
Cleveland, Ohio						
Denver, Colo.	0.01	1	0.02	1	0.08	1
Detroit, Mich.						
Dodge City, Kans.						
Duluth, Minn.						
Eastport, Me.	0.02	12	0.03	12	0.17	12
Galveston, Tex.	0.18	14	0.35	14	0.77	14
Jupiter, Fla.	0.15	11	0.20	11	0.70	11
Key West, Fla.	0.25	22	0.33	22	0.75	22
Marquette, Mich.						
Memphis, Tenn.	0.06	2	0.11	2	0.23	22
New York City	0.10	27	0.15	27	0.45	27
New Orleans, La.	0.12	22	0.15	22	0.45	22
Norfolk, Va.	0.02	24	0.04	24	0.16	24
Philadelphia, Pa.	0.03	2	0.06	2	0.30	2
Philadelphia Water Works	0.03	3	0.05	3	0.25	3
Portland, Oregon	0.17	1	0.21	1	0.46	1
Saint Louis, Mo.						
Saint Paul, Minn.						
San Diego, Cal.	0.05	28	0.10	28	0.30	28
San Francisco, Cal.	0.08	4	0.10	4	0.26	4
Savannah, Ga.	0.05	11	0.07	11	0.20	11
Washington City	0.10	22	0.15	22	0.35	22
Wilmington, N. C.	0.15	11	0.30	11	1.05	11

* Not sufficient to register. † Rain-gauge not working. ‡ Less than .05 in 1 hour. § No record on account of snow.

SNOW (in inches and tenths).

Chart V shows the depth of snowfall reported for the month. Snowfall to exceed 50.0 was reported at Cumbres and Fort Lewis, Colo., and Alta, Utah; to exceed 40.0 at Calais, Me., Somerset, Pa., and Marquette, Mich.; to exceed 30.0 at Stratford, Vt., in central Vt., south-central Pa., at mountain stations in Colo., and at Nogal, N. Mex.; to exceed 20.0 over the greater part of Me. and N. H., south and north Vt., at several stations in Mass., west Conn., central and east N. Y., north-central Va., northeast Pa., upper and north lower Mich., at Springvale, Kans., Embarrass, Wis., northwest N. Mex., west-central Idaho, and at Cisco, Cal.; and to exceed 10.0 in New England, save on the south coast, in N. Y., a greater part of Pa., and thence southward to north-central Va., in west N. C., south-central Tenn., over the east part of the middle plateau, and north N. Mex., thence eastward over south Mo., and northeastward over the north part of the upper lake region,